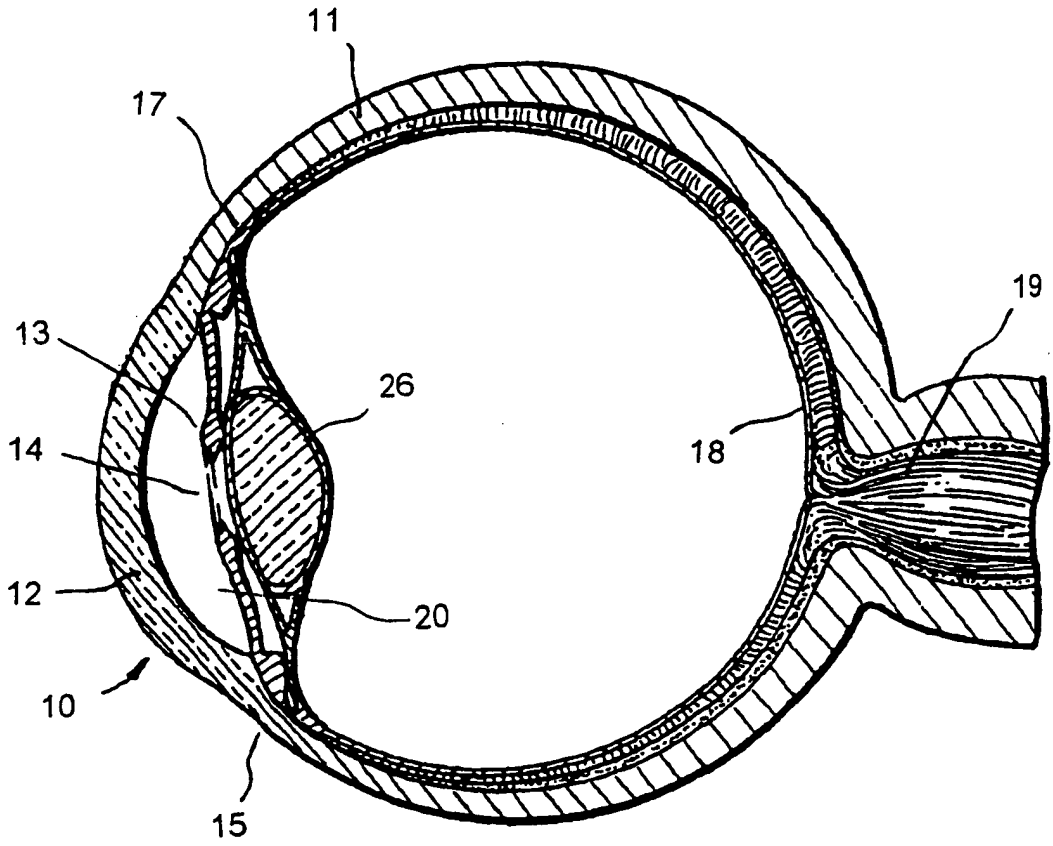


FIG. 1

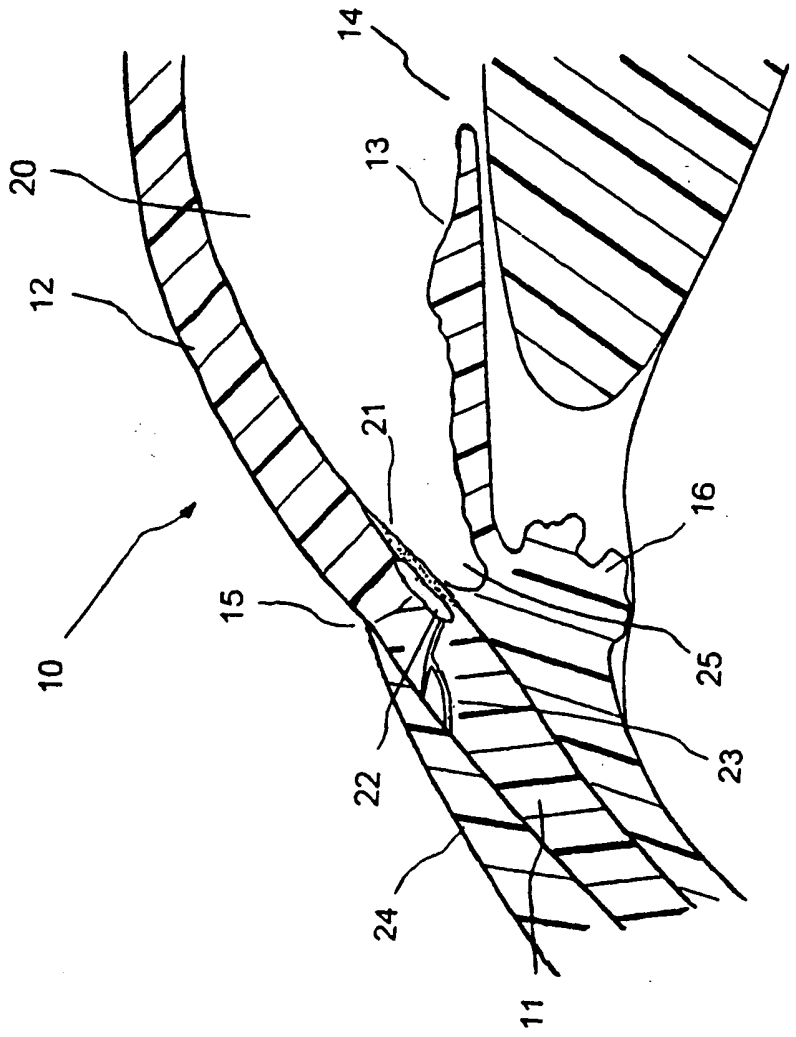


FIG. 2

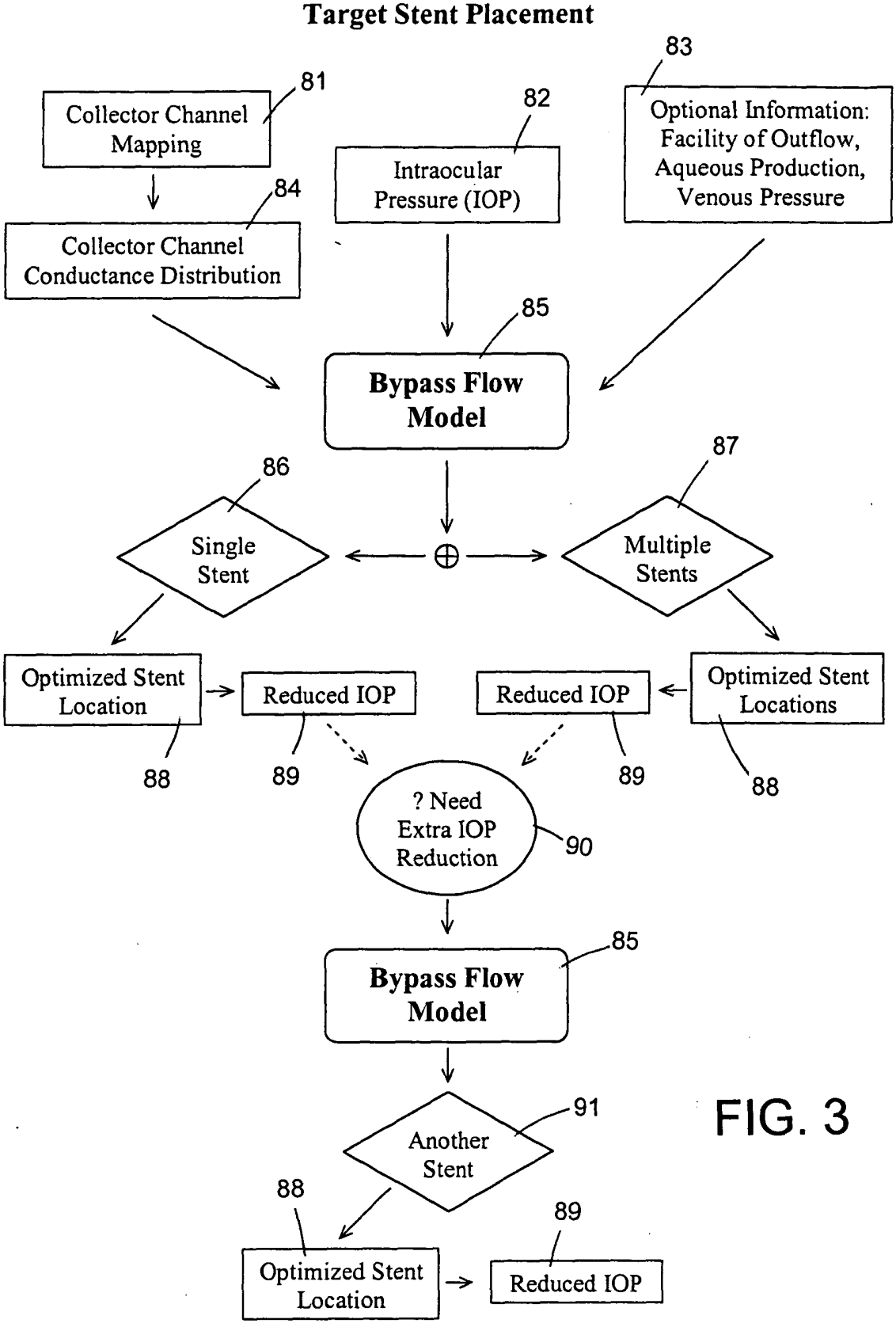
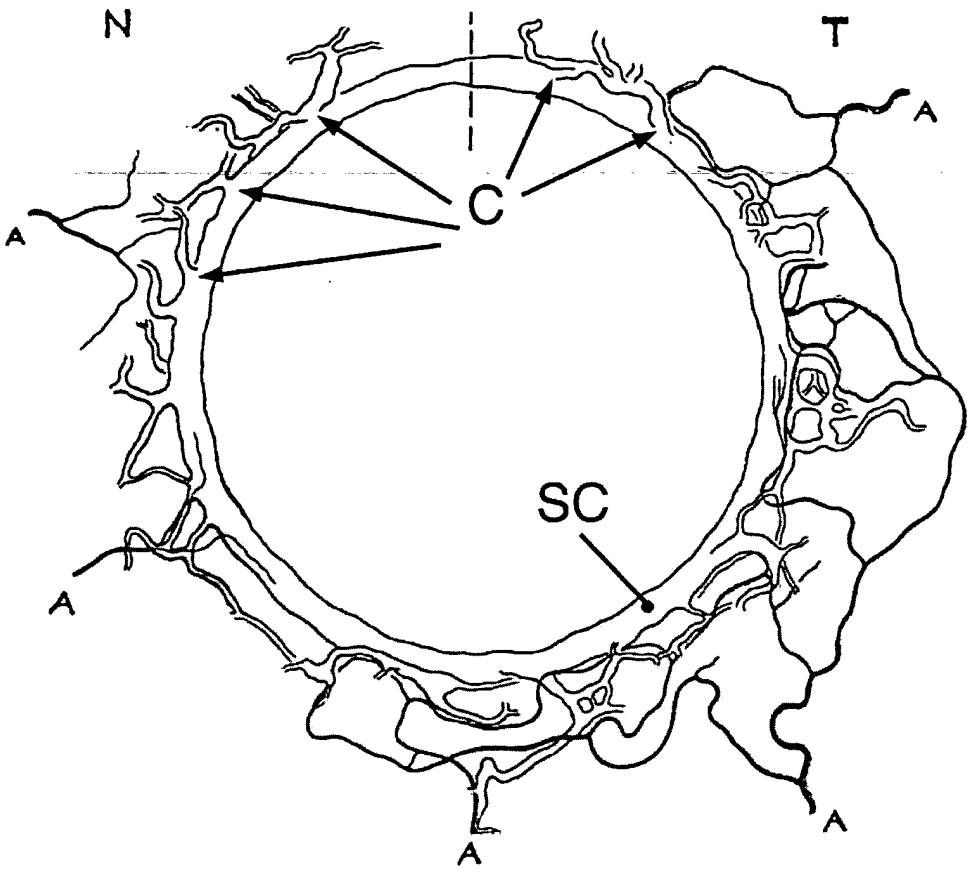

Target Stent Placement
Collector Channel Mapping
81
Intraocular Pressure (IOP)
82
Optional Information: Facility of Outflow, Aqueous Production, Venous Pressure
83
Collector Channel Conductance Distribution
84
Bypass Flow Model
85
Single Stent
86
Multiple Stents
87
Optimized Stent Location
Reduced IOP
Reduced IOP
Optimized Stent Locations
88
89
89
88
? Need Extra IOP Reduction
90
Bypass Flow Model
85
Another Stent
91
88
89
Optimized Stent Location
Reduced IOP

FIG. 3



Note: SC: Schlemm's canal, C: Collector channel,
A: Artery, N: Nasal, T: Temporal

FIG. 4

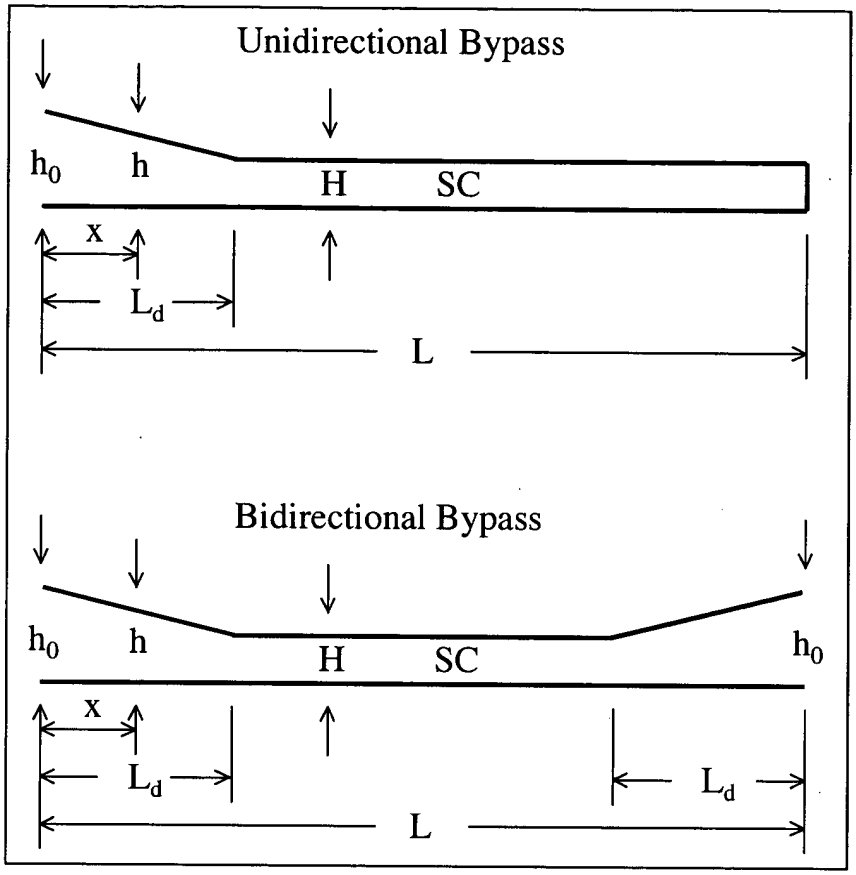

Unidirectional Bypass
h_0
h
H
SC
x
L_d
L
Bidirectional Bypass
h_0
h
H
SC
h_0
x
L_d
L_d
L

FIG. 5

IOP (mmHg)	15
Episcleral Venous Pressure (mmHg)	9
Conventional Outflow (μl/min)	2.4
Trabecular Meshwork Resistance (mmHg/(μl/min))	1.25
Collector Channel Resistance (mmHg/(μl/min))	1.25
Schlemm's Canal Resistance (mmHg/(μl/min)/mm)	1
Facility of Outflow (μl/min/mmHg)	0.4
Length of Schlemm's Canal (mm)	36
Viscosity of Aqueous Humor (cP)	0.7193
Height of Schlemm's Canal (μm)	20
Width of Schlemm's Canal (μm)	230

FIG. 6. Average parameters for a normal eye with healthy trabecular meshwork

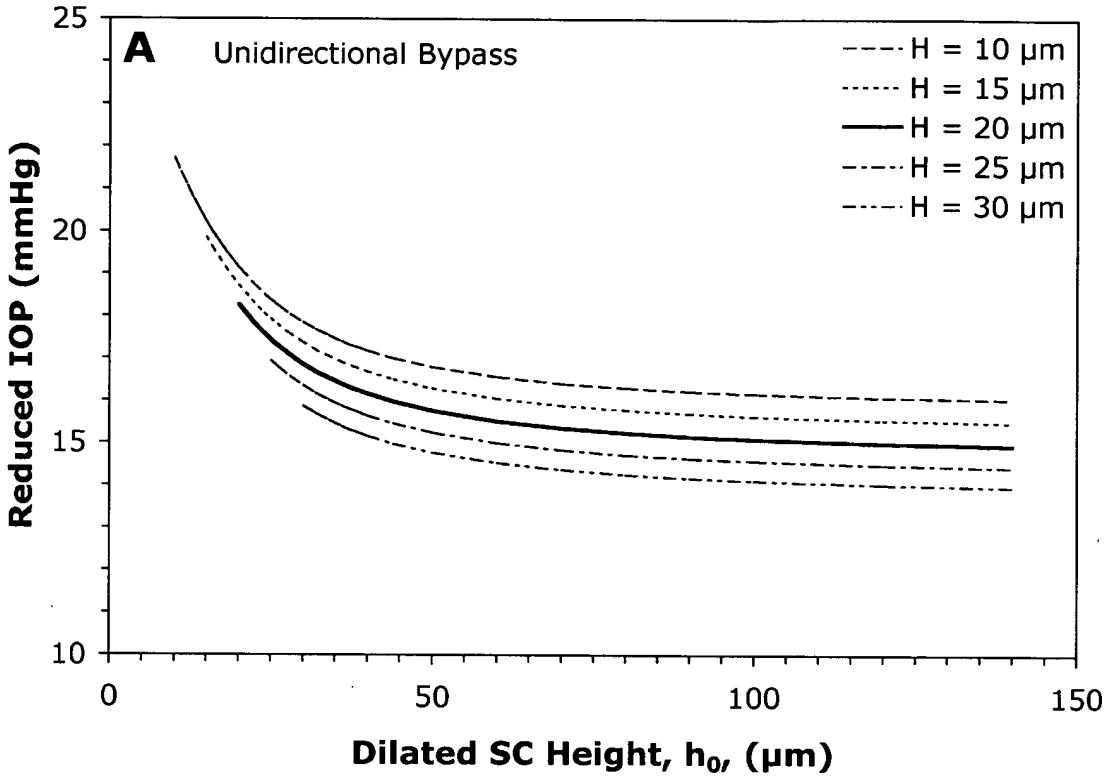

A
Unidirectional Bypass
H = 10 μm
H = 15 μm
H = 20 μm
H = 25 μm
H = 30 μm
Reduced IOP (mmHg)
25
20
15
10
0
50
100
150
Dilated SC Height, h_0, (μm)

FIG. 7

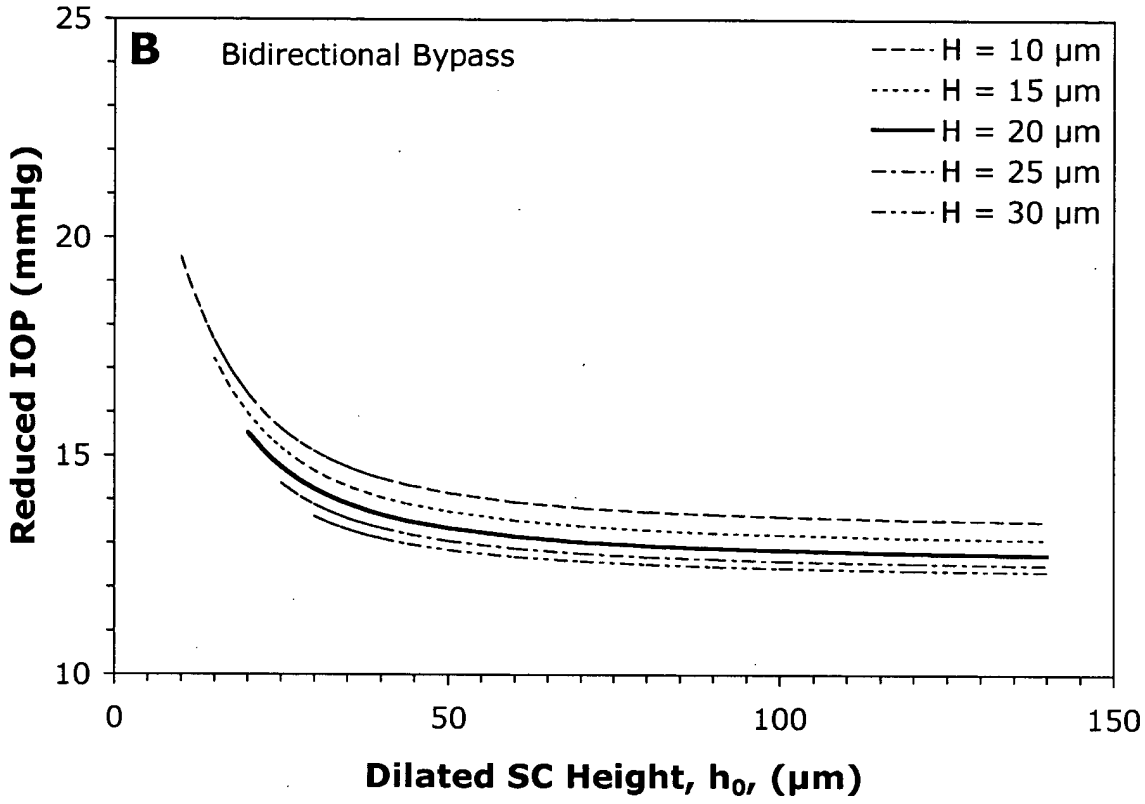

B
Bidirectional Bypass
H = 10 µm
H = 15 µm
H = 20 µm
H = 25 µm
H = 30 µm
Reduced IOP (mmHg)
25
20
15
10
0
50
100
150
Dilated SC Height, h_0, (µm)

FIG. 8

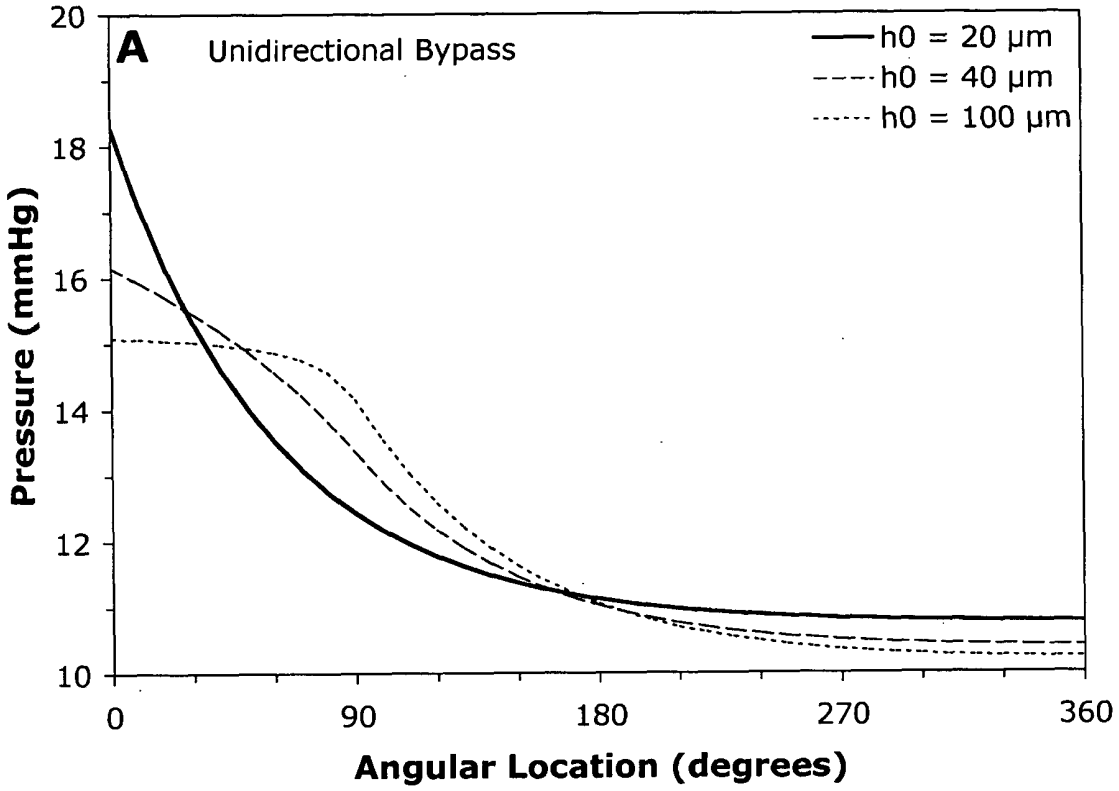

A
Unidirectional Bypass
h0 = 20 μm
h0 = 40 μm
h0 = 100 μm
Pressure (mmHg)
20
18
16
14
12
10
0
90
180
270
360
Angular Location (degrees)

FIG. 9

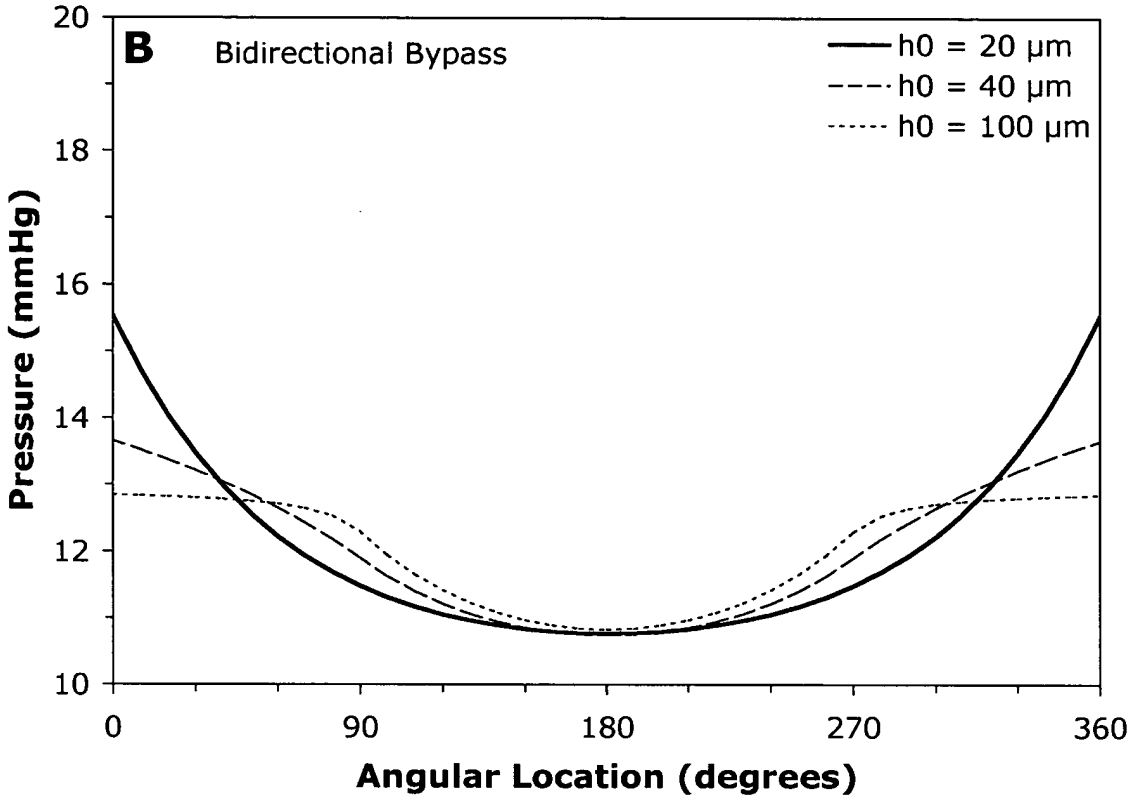

B
Bidirectional Bypass
h0 = 20 μm
h0 = 40 μm
h0 = 100 μm
Pressure (mmHg)
20
18
16
14
12
10
0
90
180
270
360
Angular Location (degrees)

FIG. 10

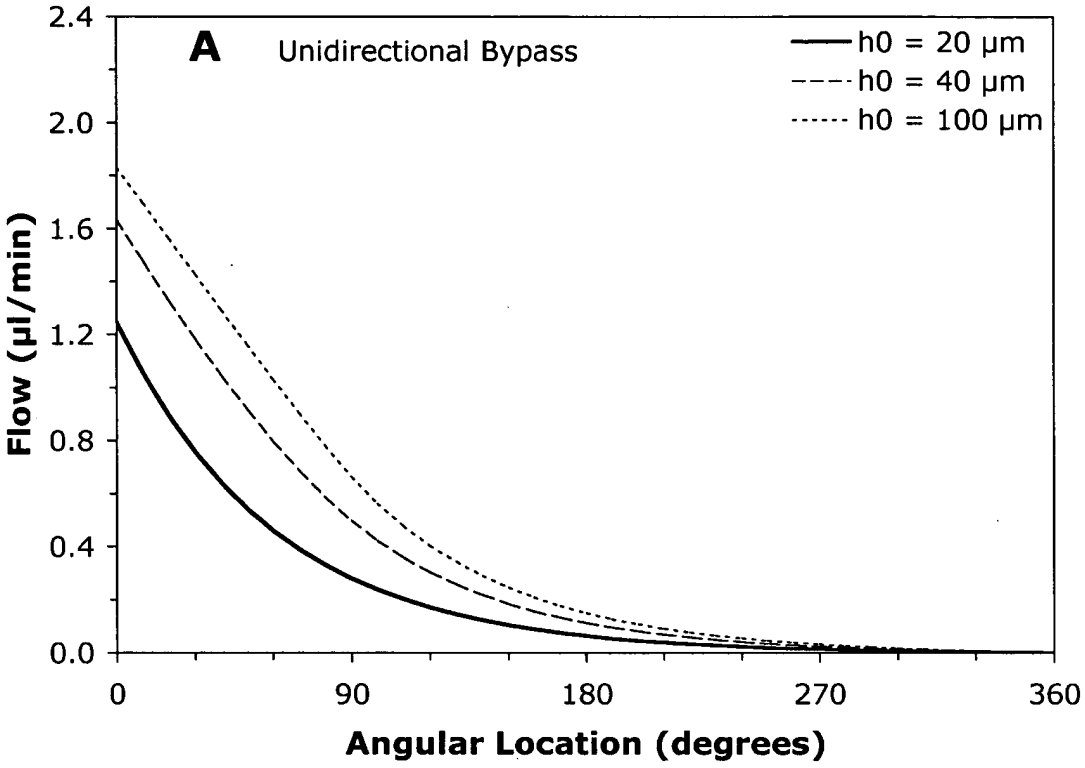

A
Unidirectional Bypass
h0 = 20 µm
h0 = 40 µm
h0 = 100 µm
Flow (µl/min)
2.4
2.0
1.6
1.2
0.8
0.4
0.0
0
90
180
270
360
Angular Location (degrees)

FIG. 11

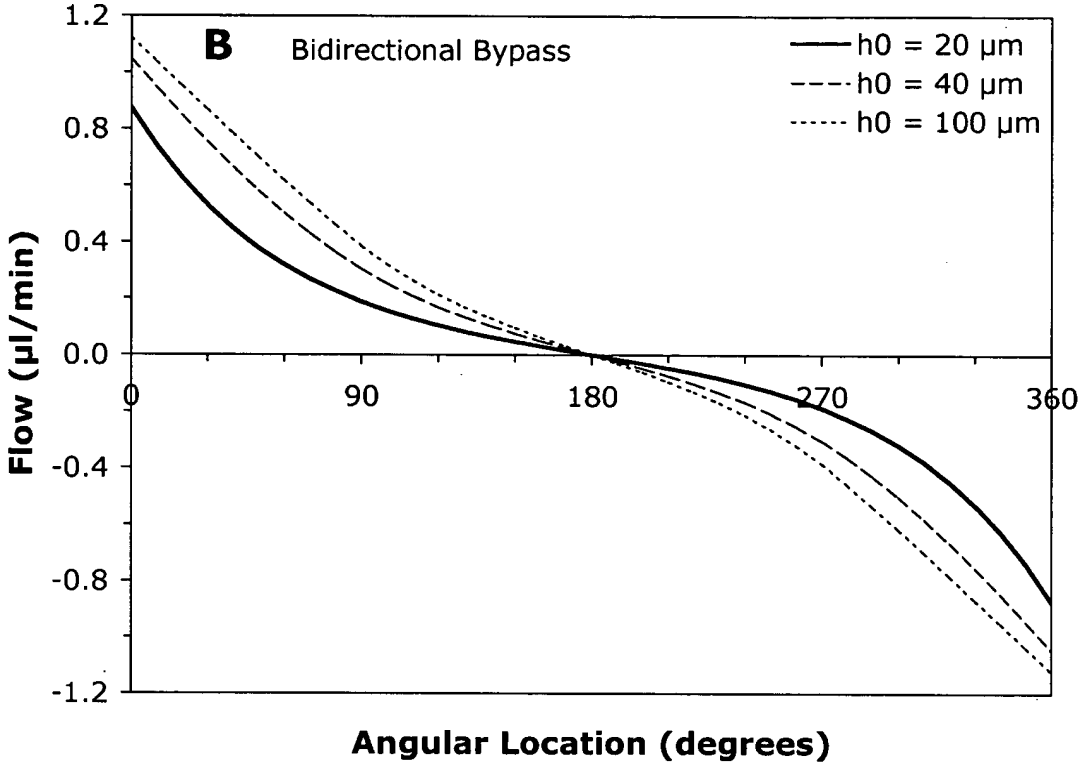

B
Bidirectional Bypass
h0 = 20 µm
h0 = 40 µm
h0 = 100 µm
1.2
0.8
0.4
0.0
-0.4
-0.8
-1.2
Flow (µl/min)
0
90
180
270
360
Angular Location (degrees)

FIG. 12

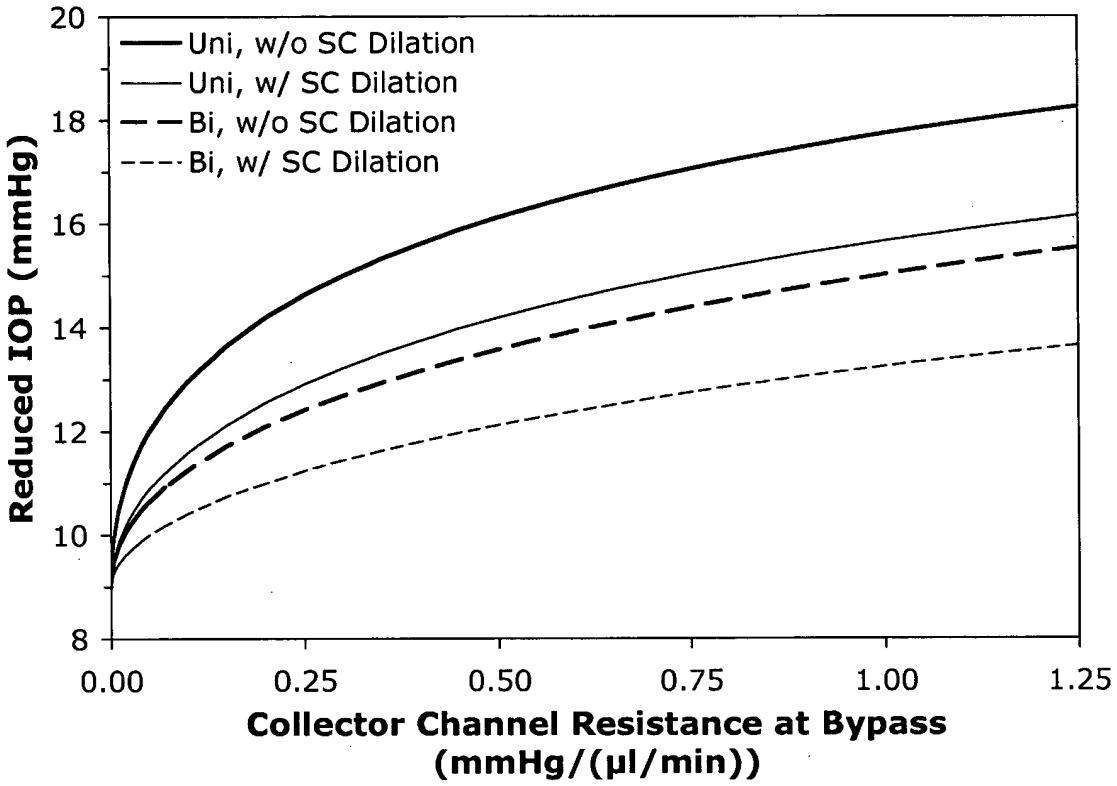

Uni, w/o SC Dilation
Uni, w/ SC Dilation
Bi, w/o SC Dilation
Bi, w/ SC Dilation
Reduced IOP (mmHg)
20
18
16
14
12
10
8
0.00
0.25
0.50
0.75
1.00
1.25
Collector Channel Resistance at Bypass
(mmHg/(µl/min))

FIG. 13

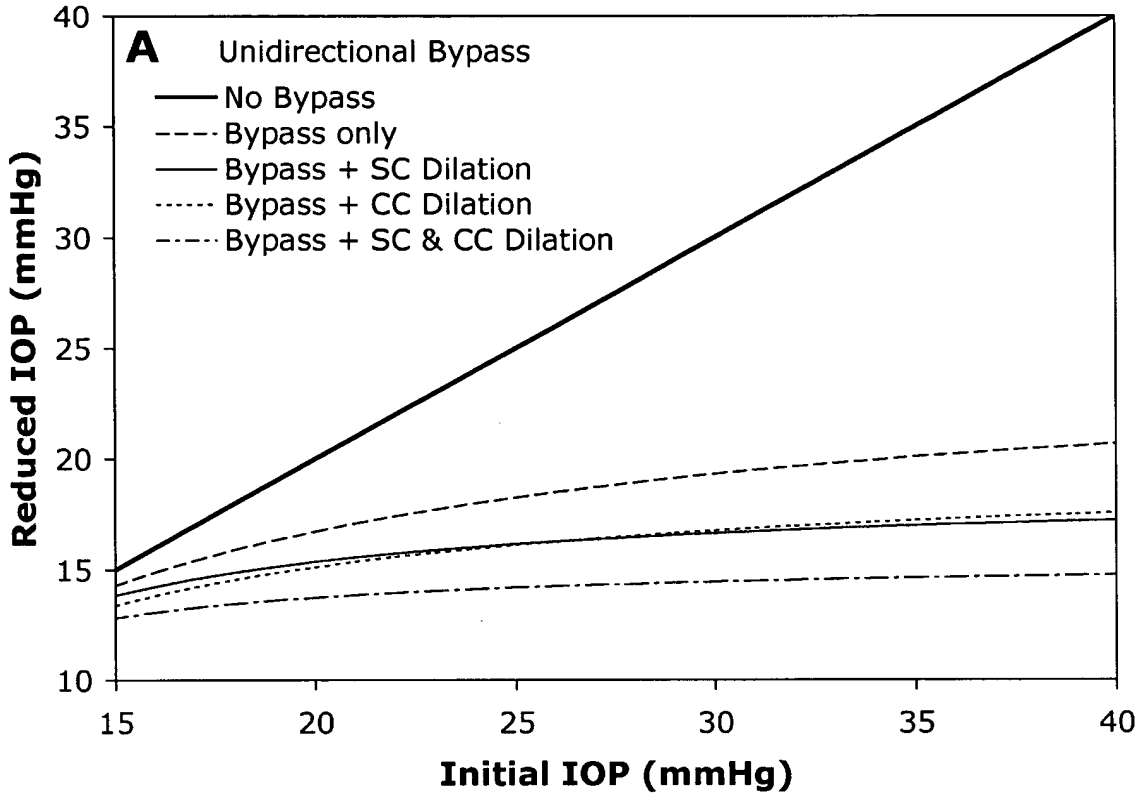

A
Unidirectional Bypass
No Bypass
Bypass only
Bypass + SC Dilation
Bypass + CC Dilation
Bypass + SC & CC Dilation
Reduced IOP (mmHg)
Initial IOP (mmHg)
40
35
30
25
20
15
10
15
20
25
30
35
40

FIG. 14

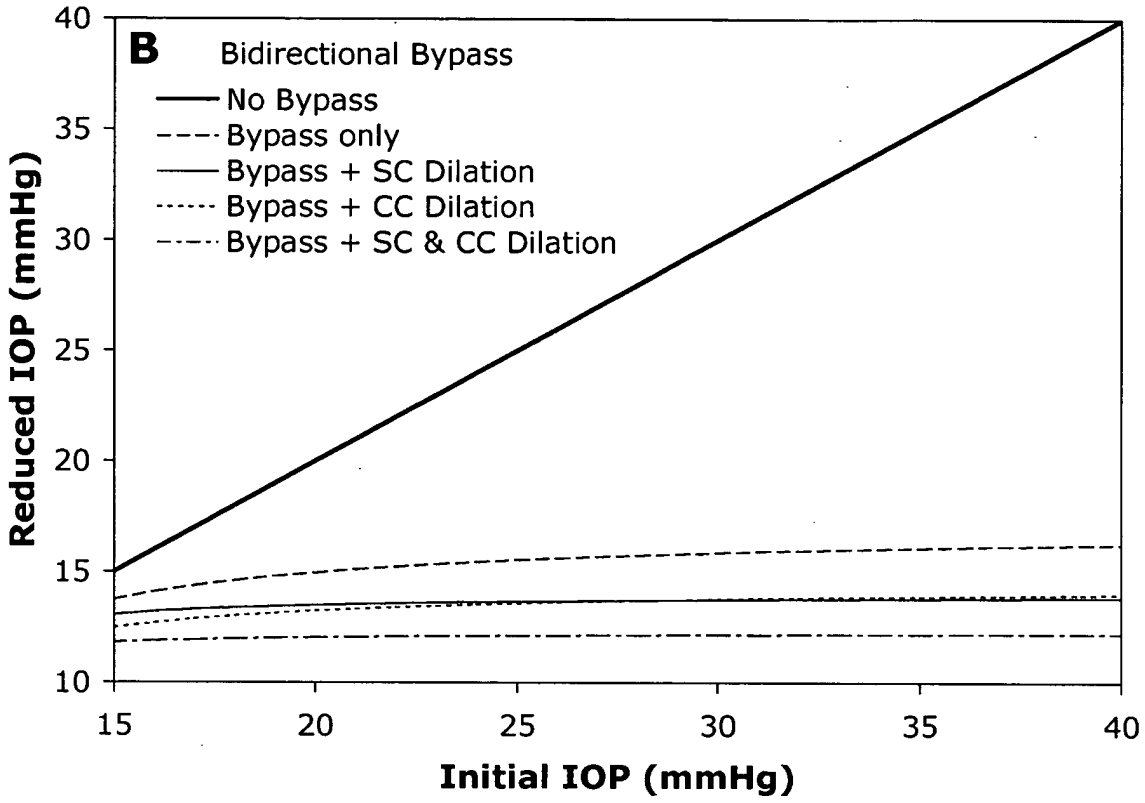

B
Bidirectional Bypass
No Bypass
Bypass only
Bypass + SC Dilation
Bypass + CC Dilation
Bypass + SC & CC Dilation
Reduced IOP (mmHg)
Initial IOP (mmHg)
40
35
30
25
20
15
10
15
20
25
30
35
40

FIG. 15

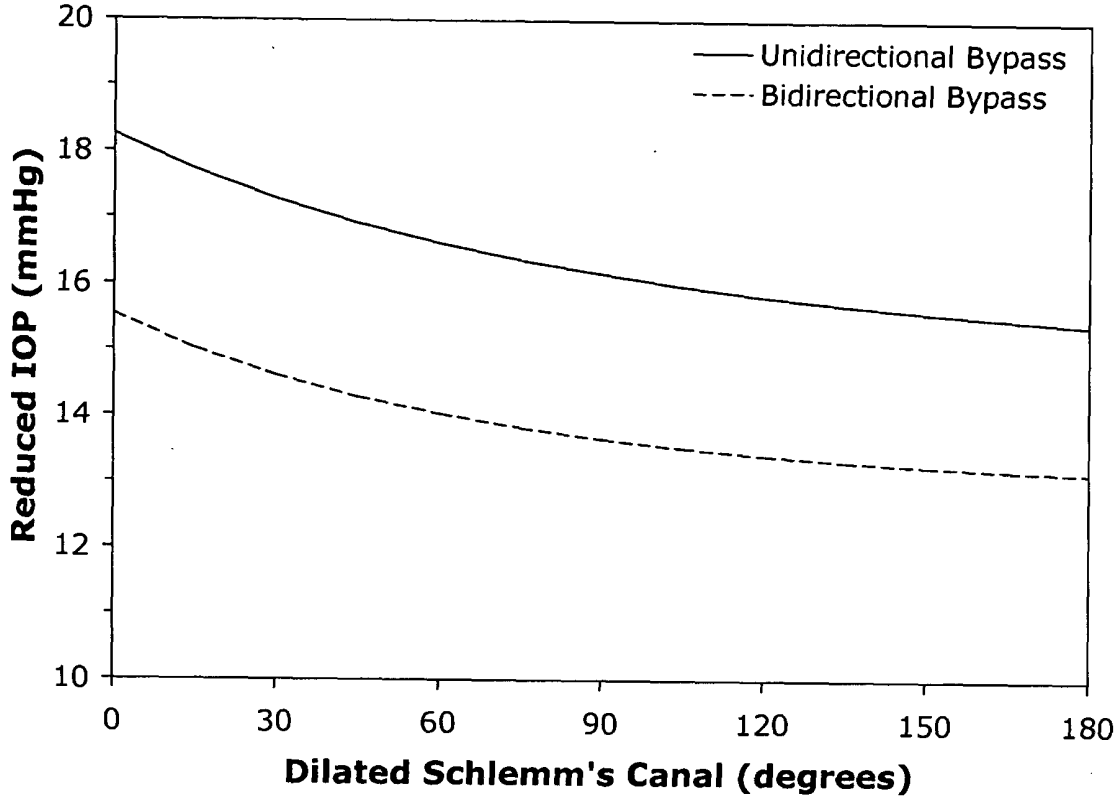

20
18
16
14
12
10
Reduced IOP (mmHg)
0
30
60
90
120
150
180
Dilated Schlemm's Canal (degrees)
Unidirectional Bypass
Bidirectional Bypass

FIG. 16

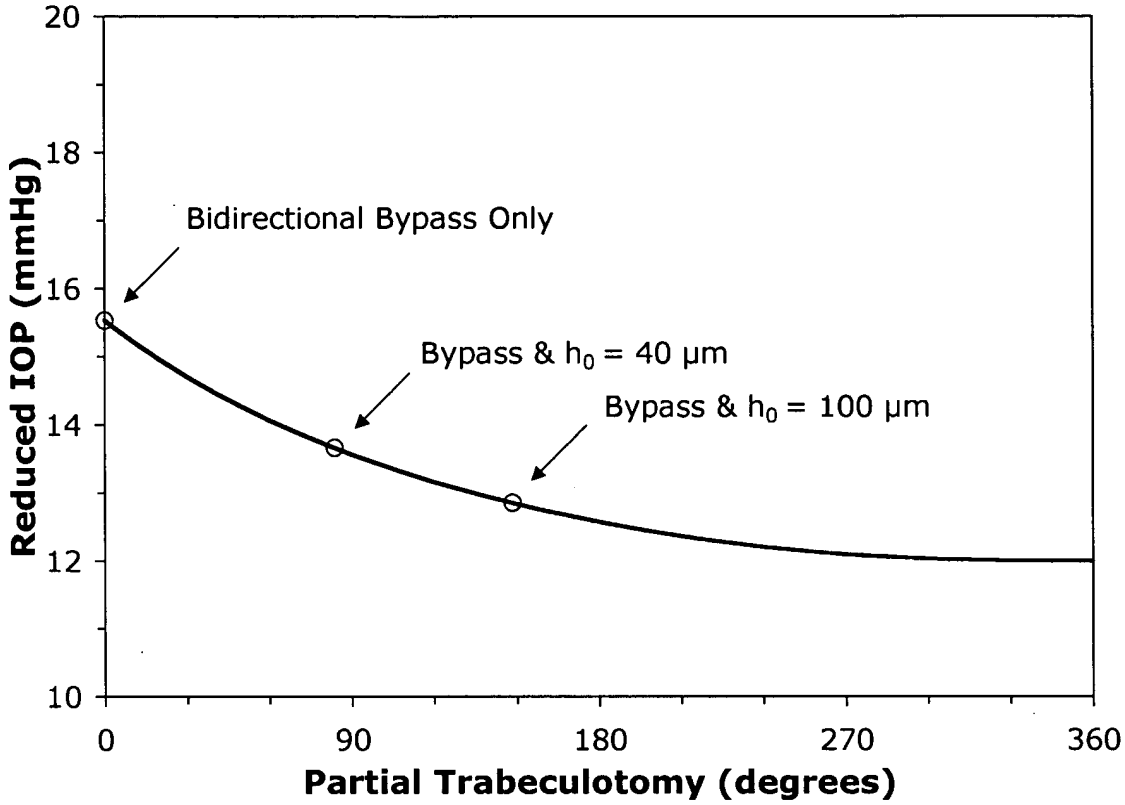

20
18
16
14
12
10
Reduced IOP (mmHg)
Bidirectional Bypass Only
Bypass & h_0 = 40 µm
Bypass & h_0 = 100 µm
0
90
180
270
360
Partial Trabeculotomy (degrees)

FIG. 17

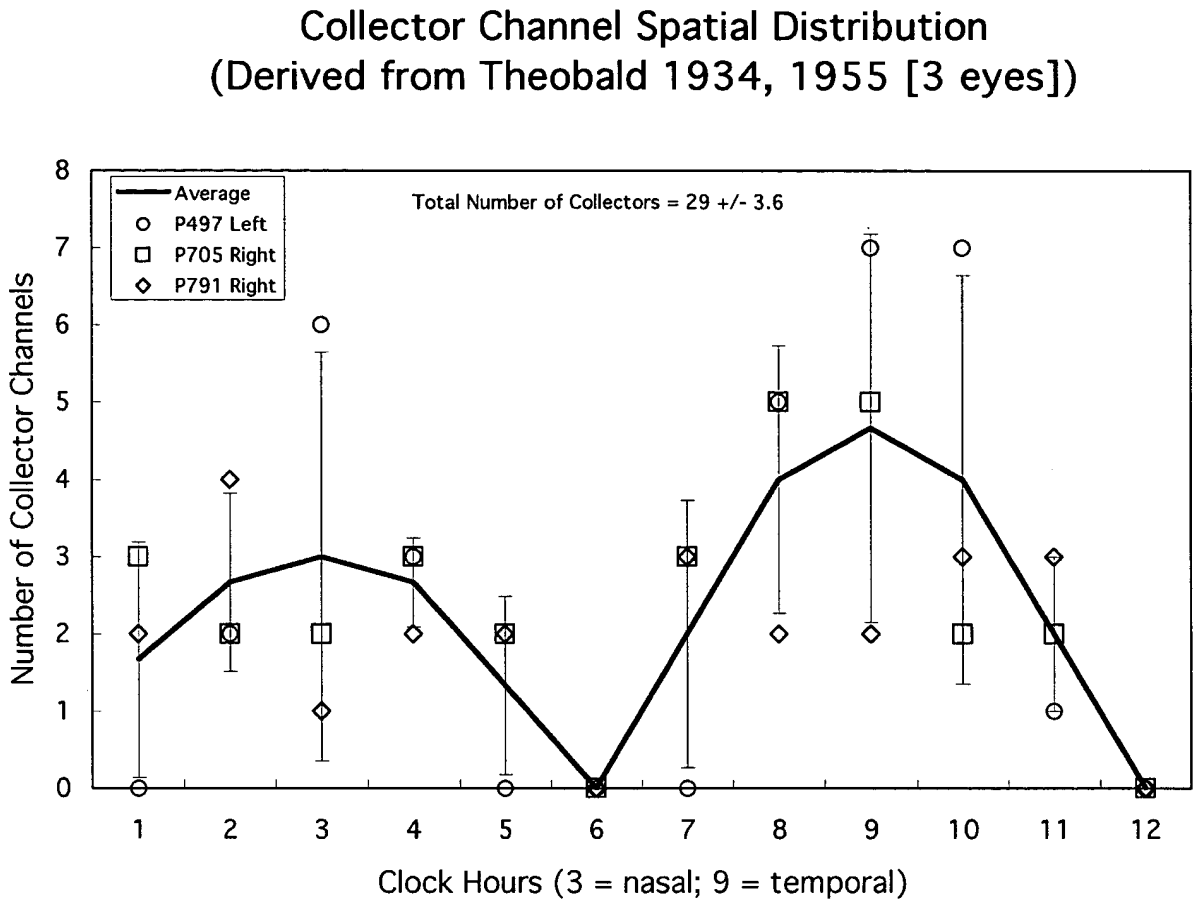

Collector Channel Spatial Distribution
(Derived from Theobald 1934, 1955 [3 eyes])
Average
P497 Left
P705 Right
P791 Right
Total Number of Collectors = 29 +/- 3.6
Number of Collector Channels
0
1
2
3
4
5
6
7
8
1
2
3
4
5
6
7
8
9
10
11
12
Clock Hours (3 = nasal; 9 = temporal)

FIG. 18

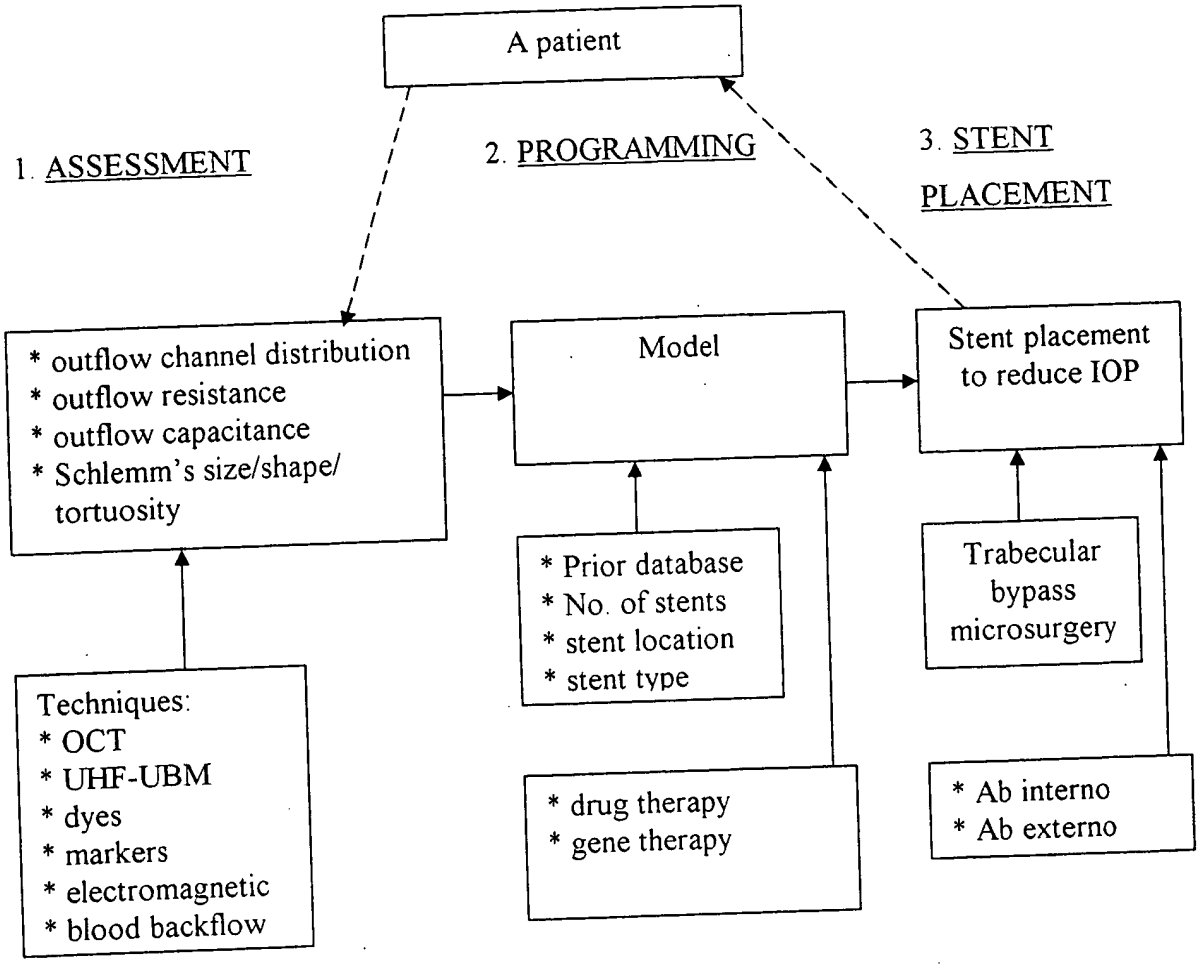

A patient
1. ASSESSMENT
2. PROGRAMMING
3. STENT PLACEMENT
* outflow channel distribution
* outflow resistance
* outflow capacitance
* Schlemm's size/shape/ tortuosity
Model
Stent placement to reduce IOP
Techniques:
* OCT
* UHF-UBM
* dyes
* markers
* electromagnetic
* blood backflow
* Prior database
* No. of stents
* stent location
* stent type
Trabecular bypass microsurgery
* drug therapy
* gene therapy
* Ab interno
* Ab externo

FIG. 19